Epoch.	Observer.	θ_o	θ_c	$\theta_o-\theta_c$	ρ_o	ρ_c	$\rho_o-\rho_c$
		°	°	°	″	″	″
1882·46	Rugby	221·9	218·9	+3·0	2·22	2·00	+0·22
1882·93	Engelmann	221·2	219·9	+1·3	2·06	1·97	+0·09
1883·42	Hall	221·6	221·0	+0·6	1·90	1·94	−0·04
1883·46	Schiaparelli	221·8	221·1	+0·7	1·91	1·94	−0·03
1884·39	Hall	224·8	223·3	+1·5	1·86	1·89	−0·03
1884·46	Schiaparelli	224·9	223·5	+1·4	1·98	1·89	+0·09
1884·63	Rugby	226·6	223·9	+2·7	1·78	1·88	−0·10
1885·35	Perrotin	223·8	225·7	−1·9	1·86	1·84	+0·02
1885·36	Hall	226·8	225·7	+1·1	1·78	1·84	−0·06
1885·43	Rugby	227·9	225·9	+2·0	1·72	1·84	−0·12
1885·44	Schiaparelli	227·1	225·9	+1·2	1·83	1·84	−0·01
1886·38	Perrotin	228·7	228·4	+0·3	1·68	1·79	−0·11
1886·41	Rugby	231·4	228·5	+2·9	1·46	1·79	−0·33
1886·41	Hall	228·0	228·5	−0·5	1·83	1·79	+0·04
1887·37	Hall	232·7	231·3	+1·4	1·62	1·73	−0·11
1887·45	Schiaparelli	231·8	231·5	+0·3	1·67	1·73	−0·06
1887·45	Rugby	232·8	231·5	+1·3	1·08	1·73	−0·65
1887·59	Tarrant	228·0	231·9	−3·9	1·80	1·72	+0·08
1888·33	Rugby	236·5	234·1	+2·4	1·12	1·67	−0·55
1888·37	Hall	233·9	234·2	−0·3	1·61	1·67	−0·06
1889·28	Rugby	235·3	237·1	−1·8	1·60	1·61	−0·01
1889·45	Hall	237·1	237·7	−0·6	1·51	1·61	−0·10
1890·43	Hall	240·7	241·1	−0·4	1·54	1·54	0·00
1890·47	Hayn	240·5	241·2	−0·7	1·57	1·54	+0·03
1892·37	Burnham	248·6	248·6	0·0	1·46	1·43	+0·03

As the great majority of the residuals in position-angle are less than 2°, and many under 1°, the agreement may be considered satisfactory.

Assuming that the mass of the system is equal to the mass of the Sun, the "hypothetical parallax" will be—

$$p = aP^{-\frac{2}{3}} = 0''{\cdot}087.$$

On the Orbit of the Binary Star β 416. By J. E. Gore.

This star, which is identical with BAC 5825, was discovered as a wide double star by Sir John Herschel on 1837 June 8, during his residence at the Cape of Good Hope. In 1876 Mr. Burnham found the brighter component to be also double, but only estimated the position-angle and distance. Since its

discovery the star has not been often measured, there being no measures in the years 1877–88. I find, however, that the available measures, although few in number, are sufficient to give an approximate orbit, the change in position-angle since 1876 being over 200°. I have therefore computed the orbit, and find the following provisional elements:—

Elements of β 416.

P = 34·48 years	$\Omega = 139°\ 26'$
T = 1891·85	$\lambda = 278°\ 15'$
$e = 0·5562$	$a = 2''·13$
$i = 56°\ 43'·5$	$\mu = -10°·4413$

The following is a comparison between the measures and the positions computed from the above elements:—

Epoch.	Observer.	θ_o	θ_c	$\theta_o - \theta_c$	ρ_o	ρ	$\rho_o - \rho_c$
1876·52	Burnham	240° ±	231°·6	+8°·4	1″·80 ±	1″·81	−0″·01 ±
1877·53	At Cincinnati	222·6	225·1	−2·5	1·80	1·79	+0·01
1877·64	Russell	224·4	224·4	0·0	1·77	1·78	−0·01
1888·72	Burnham	147·5	146·8	+0·7	1·88	1·52	+0·36
1889·43	,,	134·1	139·3	−5·2	1·35	1·36	−0·01
1889·63	Pollock	131·9	136·9	−5·0	0·97	1·30	−0·33
1891·53	Burnham	82·3	86·1	−3·8	0·51	0·60	−0·09
1892·38	,,	24·4	24·3	+0·1	0·58	0·57	+0·01

The measure in 1892, made with the 36-inch refractor of the Lick Observatory, was kindly sent to me by Mr. Burnham.

Assuming the mass of the system to be equal to the mass of the Sun, the "hypothetical parallax" will be—

$$p = \frac{a}{P^{\frac{2}{3}}} = 0''·201.$$

The magnitudes of the components are about 6·3, and 8. As a single star it was estimated 6·1 at Cordoba (142 Scorpii, U.A. =Lacaille 7215).

The position of the star is for 1880—

R.A. $17^h\ 10^m\ 47^s$

Decl. $-34°\ 51'\ 12''$

Mr. Burnham measured the distant companion as follows:—

1892·36 : 129°·4 : 30″·55; mag. 12.

As Sir John Herschel estimated the position-angle at 130°±, there would seem to be no change in the position of this companion.

On certain Variable Stars having the Appearance, visually, of Planetary Nebulæ. By Cuthbert E. Peek, M.A.

Having observed variable stars regularly for the last seven years, I wish to call attention to a letter published in *Knowledge* 1892 March 1, in which I refer to the fact that a considerable number have, at times, the appearance of planetary nebulæ as described by Herr E. von Gothard in the January number of the *Monthly Notices*. Without repeating the whole of the facts there given, I quote the following with regard to three stars:—

R. Cassiopeiæ, 1886 September 17, 8·7 mag.—A large, ill-defined, deep-red star. 1889 March 11, 9·6 mag. Very hazy and ill-defined, as if shining through ruddy mist. Other stars sharp.

T. Cassiopeiæ, 1889 September 10, 7·7 mag.—Very red. A well-defined star shining through a ruddy haze.

S. Herculis, 1891 October 14.—With power 132 a faint nebulosity is suspected in the place of the variable; on slightly swaying the telescope a bluish nebulosity is certainly seen. It will be remembered that *Nova Aurigæ* was first described in the *Times* of 1892 February 3 as 'slightly fuzzy.' Instrument in use $6\frac{1}{4}$-inch equatoreal refractor.

Rousdon Observatory:
1892 *January* 29.

Observations of Saturn in 1892. By M. Joseph Guillaume, of the Observatoire de Lyon.

(*Communicated by the Rev. A. Freeman.*)

The following is the translation of a letter received by Mr. Freeman from M. Guillaume, 1893 January 5.

"I must first of all tell you that I left my own observatory at Péronnas (near Bourg-en-Bresse) in September last for that of Lyons, where I am working under the direction of M. Ch. André.

"I have published nothing as yet upon *Saturn* in 1892, but I proceed to give you all that I could say about the planet, leaving it to you to communicate it to the Royal Astronomical Society in part or entirely as may appear best to you.

"A long course of bad weather at the beginning of the year hindered me from observing as much as I could have desired, especially in watching the transits of the satellites other than